

Portland State University PDXScholar

Community Health Faculty Publications and
Presentations

School of Community Health

11-2006

Detecting Overweight Children in Primary Care: Do National Data Reflect the Typical Urban Practice?

Elena Sutu
SUNY Buffalo

Carlos J. Crespo
Portland State University, ccrespo@pdx.edu

Barbara Shine
SUNY Buffalo

Anita Doshi
SUNY Buffalo

Teresa Quattrin
SUNY Buffalo

Let us know how access to this document benefits you.

Follow this and additional works at: http://pdxscholar.library.pdx.edu/commhealth_fac



Part of the [Community Health Commons](#), and the [Nutrition Commons](#)

Citation Details

Sutu, E., Crespo, C. J., Shine, B., Doshi, A., & Quattrin, T. (2006). Detecting overweight children in primary care: Do national data reflect the typical urban practice?. *Journal Of Family Practice*, 55(11), 976-980.

This Article is brought to you for free and open access. It has been accepted for inclusion in Community Health Faculty Publications and Presentations by an authorized administrator of PDXScholar. For more information, please contact pdxscholar@pdx.edu.

Elena Sutu, MD, Carlos J. Crespo, DrPH, Barbara Shine, RN, Anita Doshi, MD, and Teresa Quattrin, MD

Division of Endocrinology-Diabetes, Women and Children's Hospital of Buffalo; Department of Pediatrics School of Medicine and Biochemical Sciences, State University of New York at Buffalo (ES, BS, AD, TQ); Portland State University, Portland, Oregon (CJC)

For more original research on weight problems in children, see "Overweight youth: Changing behaviors that are barriers to health"

PAGE 957

Detecting overweight children in primary care: Do national data reflect the typical urban practice?

Yes, they do. We discuss the significance for 3 age brackets

Practice recommendations

- Primary care physicians can easily identify overweight in children aged >2 years using body-mass index.
- There is no consensus on the appropriate way of identifying overweight before age 2 years. However, the primary care physician should be alert if the body-mass index of a child <2 years of age is significantly higher than those published (as a guideline) in this paper.
- Overweight is occurring early. Thus it is essential that primary care physicians focus on identifying overweight as early as preschool age.
- Primary care physicians have to pay particular attention to identifying overweight in non-Hispanic black children aged 2 to 11 years, who may have a higher prevalence of being at risk for overweight compared with 1999–2002 national data.
- Children seen for a sick-child visit may be at higher risk for overweight; thus, we recommend that height and weight measurements be obtained during these visits.

The rate of "at risk for overweight" and "overweight" in young children, starting in preschool years, is alarming.^{1–3} As we noted in an earlier

study, the onset of overweight occurred before age 6 years in about 80% of a selected population of children referred to our endocrinology clinic from pediatricians in western New York.⁴ The early onset of obesity, as previously reported in overweight children referred to our clinic,³ is also present in children seen in primary care.

Primary care physicians are in the best position to identify children who are at risk for overweight or are overweight, even in preschool years. A major effort has to be put forward in achieving a consensus regarding assessment of body adiposity and overweight in the child aged younger than 2 years.

We believed it was important to collect data directly from primary care practices in western New York and reduce selection bias created by referrals to an endocrinology clinic. The aims of our study were to obtain data regarding the feasibility of detecting "risk for overweight" and "overweight" in infants and young children seen for well-child visits based on pediatricians' standard practice, to compare these estimates with the national data,^{5,6} and to compare the data obtained during well-child visits with data obtained in preschool children seen for a sick-child visit.

CORRESPONDENCE

Teresa Quattrin, MD, Chief, Division of Endocrinology/Diabetes, Women and Children's Hospital of Buffalo, 219 Bryant Street, Buffalo, NY 14222. E-mail: quattrin@buffalo.edu

TABLE 1**Demographic data (well child visits only)**

Cohort	NON-HISPANIC WHITE			NON-HISPANIC BLACK		
	Age (yrs) mean \pm SD	N	Sex (M/F)	Age (yrs) mean \pm SD	N	Sex (M/F)
<2 years	1.1 \pm 0.4	200	107/93	1.1 \pm 0.5	97	61/36
2–5 years	3.7 \pm 1.1	451	233/218	3.7 \pm 1.0	89	46/43
6–11 years	8.8 \pm 1.8	238	112/126	9.2 \pm 1.8	50	29/21

■ Results: Overweight in 3 age groups

Data from 1190 well-child visits (79.2% non-Hispanic white, 12.9 non-Hispanic black, 3.0% Hispanic, 1.3% other) and 292 sick-child visits (100% non-Hispanic white, aged 3.8 ± 1.1 years) were analyzed. **TABLE 1** illustrates the subjects' demographic data.

Subjects aged < 2 years. **TABLE 2** illustrates that mean body-mass index (BMI) values in subjects younger than 2 years are similar to the values reported in the National Health and Nutrition Examination Survey (NHANES) 2001 to 2002 data.

Subjects aged 2 to 5 years. The prevalence of overweight or at risk for overweight in non-Hispanic white children aged 2 to 5 years is comparable with that reported in the 1999 to 2002 NHANES dataset (**TABLE 3**). In non-Hispanic black children in this group, the prevalence of at risk for overweight is similar to the NHANES sample, but the prevalence of overweight is higher (13.5 vs 8.8%).

Within the non-Hispanic white 2- to 5-year-old group, the prevalence of "at risk for overweight" is 36% in the western New York children seen for sick visits compared with 25.5% in the children seen for well visits.

Subjects aged 6 to 11 years. Like the 2- to 5-year-olds, the prevalence of overweight or at risk for overweight in non-Hispanic white children aged 6 to 11 years is comparable with that reported

in the 1999 to 2002 NHANES data. However, a sharp increase is present in the 6- to 11-year-old non-Hispanic black group with regard to "at risk for overweight" (56.0%) and overweight (42.0%) compared with NHANES data (**TABLE 3**).

In the 6- to 11-year-olds the prevalence of "overweight" or at "risk for overweight" in non-Hispanic black subjects is 3 (42.0 vs 13.9%) and almost 2 times (56.0% vs 29.4%) higher, respectively, than those observed in non-Hispanic white children.

■ Discussion

Significance of the data for those aged <2 years

The earlier children begin increasing in adiposity, the greater the risk for being obese as adolescents and adults,^{7,8} with 40% of infants whose weight was above the 95th percentile reported to be overweight as adults.⁹ Our BMI data in the subjects younger than 2 years were similar to those reported in the 2001 to 2002 NHANES sample.

However, there is no agreement on the best way of assessing overweight in infants aged <2 years,¹⁰ and BMI may not represent a valid measure of adiposity in these children.¹¹ Traditionally, weight-length ratio or ponderal index have been used to define overweight in infants aged <2 years. Despite the potential limit of using BMI in infants, the use of BMI from birth on may be helpful in tracking

FAST TRACK

The earlier a child begins increasing in adiposity, the greater the risk for obesity as an adolescent and an adult

TABLE 2

BMI data for patients aged <2 years (well-child visits only)

	AGE GROUP	NHANES (N)	WNY (N)
Non-Hispanic white	6–12 months	17.9 ± 1.4 (88)	18.3 ± 1.8 (75)
	13–18 months	16.7 ± 1.2 (41)	17.5 ± 1.7 (78)
	19–24 months	16.3 ± 1.3 (44)	17.0 ± 1.3 (47)
Non-Hispanic black	6–12 months	17.9 ± 1.8 (55)	17.7 ± 1.8 (38)
	13–18 months	17.1 ± 1.4 (35)	18.0 ± 1.8 (33)
	19–24 months	16.6 ± 1.4 (35)	17.5 ± 2.3 (26)

the infant's growth and looking at trends and risk factors associated with the years preceding the adiposity rebound.^{7,10}

The data presented herein are significant because they reflect the anthropometrical parameters primary care physicians obtain and should use routinely to calculate and plot BMI.^{2,12}

Moreover, the primary care practices sampled could have been located anywhere in the US and the data generated are similar to the national data, despite having been collected without any standardization or additional personnel training. Thus they illustrate that primary care physicians can easily identify overweight in young children without implementing any change in their current practice, as long as they do not use the paper-and-pencil methods, shown to systematically overestimate length.¹³

Significance of the data for those aged 2 to 5 years

In 2- to 5-year-old non-Hispanic white children seen for well-child visits in a typical primary care setting in western New York, the prevalence of "overweight" is similar to the national prevalence, with a trend towards a higher prevalence of "at risk for overweight" compared with the national data (western New York 25.5% vs 20.8% NHANES).⁵ These data provide alerting evidence that 25% to 30% of preschool children are at risk for overweight at a routine well-child visit.

Significance of the data for those aged 6 to 11 years

Caution must be used in interpreting our finding of a higher prevalence of overweight (42.0 vs 19.8%) in the 6- to 11-year-old non-Hispanic black population, given the smaller size of this sample. However, this may reflect the fact that prevalence of overweight may be worsening in minorities, and may be higher in specific areas of the US and in populations with lower socioeconomic status.

In fact Gauthier et al¹⁴ showed that 38% of males and 16% of females (aged 4 to 17 years) were obese in a predominantly rural community of Michigan with low socioeconomic status. A higher prevalence of obesity was also found by these authors in a large database from Practice Partner Research Network practices located in 24 states.¹⁵

Comorbidities and the sick child

There are several known obesity comorbidities,¹⁶ but it is unclear if the overweight status is actually posing the affected child at higher risk for developing illnesses treated routinely by the primary care physicians, such as viral syndrome, otitis media, and others.^{17–20} Our preliminary data in a sample of 2- to 5-year-old non-Hispanic white children seen for a sick visit suggest that the prevalence of at risk for overweight may be higher in children seen for a sick-child compared with well-child visit.

FAST TRACK

BMI may not represent a valid measure of adiposity in children <2 years, but it remains useful in tracking an infant's growth

TABLE 3

**Percentage of children aged 2 to 5 years
and 6 to 11 years at risk for overweight or overweight**

	AGE GROUP	WESTERN NEW YORK, 2003–2005	NHANES, 1999–2002
Non-Hispanic white >95th	2–5 years	10.0	8.6
Non-Hispanic white >95th	6–11 years	13.9	13.5
Non-Hispanic white >85th	2–5 years	25.5	20.8
Non-Hispanic white >85th	6–11 years	29.4	28.6
Non-Hispanic black >95th	2–5 years	13.5	8.8
Non-Hispanic black >95th	6–11 years	42.0	19.8
Non-Hispanic black >85th	2–5 years	28.1	23.2
Non-Hispanic black >85th	6–11 years	56.0	33.7

Since many children are only brought to medical attention when they are in need of urgent care, by omitting height and weight measurements at the time of a sick-child visit, physicians may miss the only opportunity of detecting the child who is at risk for overweight, and thus in need of preventative measures.

ACKNOWLEDGMENTS

The author would like to thank the pediatric practices who collaborated in this study and are particularly grateful to Drs Cozza, Lana, Laws, McNally, Vaughan and Vetrano. The Authors are indebted to Mrs Sherry Ortiz for her assistance in the manuscript preparation. This work was presented in part at the 2004 Pediatric Academic Society Annual Meeting.

REFERENCES

- Deckelbaum RJ, Williams CL. Childhood obesity: the health issue. *Obes Res* 2001; 9 Suppl 4:239S–243S.
- Baird J, Fisher D, Lucas P, Kleijnen J, Roberts H, Law C. Being big or growing fast: systematic review of size and growth in infancy and later obesity. *BMJ* 2005; 331:929.
- Ogden CL, Troiano RP, Briefel RR, Kuczmarski RJ, Flegal KM, Johnson CL. Prevalence of overweight among pre-school children in the United States, 1971 through 1994. *Pediatrics* 1997; 99:E1.
- Quattrin T, Liu E, Shaw N, Shine B, Chiang E. Obese children who are referred to the pediatric endocrinologist: characteristics and outcome. *Pediatrics* 2005; 115:348–351.
- Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM: Prevalence of overweight and obesity among US children, adolescents, and adults, 1999–2002. *JAMA* 2004; 291:2847–2850.
- Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999–2000. *JAMA* 2002; 288:1728–1732.
- Rolland-Cachera MF, Deheeger M, Bellisle F, Sempe M, Guilloud-Bataille M, Patois E. Adiposity rebound in children: a simple indicator for predicting obesity. *Am J Clin Nutr* 1984; 39:129–135.
- Whitaker RC, Pepe MS, Wright JA, Seidel KD, Dietz WH. Early adiposity rebound and the risk of adult obesity. *Pediatrics* 1998; 101:E5.
- Charney E, Goodman HC, McBride M, Lyon B, Pratt R. Childhood antecedents of adult obesity. Do chubby infants become obese adults? *N Engl J Med* 1976; 295:6–9.
- Dietz WH. “Adiposity rebound”: reality or epiphenomenon? *Lancet* 2000; 356:2027–2028.
- Dietz WH, Robinson TN. Use of the body mass index (BMI) as a measure of overweight in children and adolescents. *J Pediatr* 1998; 132:191–193.
- Krebs NF, Jacobson MS. Prevention of pediatric overweight and obesity. *Pediatrics* 2003; 112:424–430.
- Rifas-Shiman SL, Rich-Edwards JW, Scanlon KS, Kleinman KP, Gillman MW. Misdiagnosis of overweight and underweight children younger than 2 years of age due to length measurement bias. *Medscape Gen Med* 2005; 7:56.
- Gauthier BM, Hickner JM, Noel MM. High prevalence of overweight children in Michigan primary care practices. An UPRNet study. Upper Peninsula Research Network. *J Fam Pract* 2000; 49:73–76.
- Gauthier BM, Hickner JM, Ornstein S. High prevalence of overweight children and adolescents in the Practice Partner Research Network. *Arch Pediatr Adolesc Med* 2000; 154:625–628.
- Weiss R, Caprio S. The metabolic consequences of childhood obesity. *Best Pract Res Clin Endocrinol Metab* 2005; 19:405–419.

FAST TRACK

The prevalence of overweight may be worsening in minorities and populations with low socioeconomic status

FAST TRACK

Those seen for a sick-child visit may be at greater risk for overweight—use the visit as a chance to take height and weight measurements

Methods

This cross-sectional study was conducted in 2 urban practices and 3 suburban practices located in Erie County, the largest and most populated area in western New York. These practices were chosen on the basis of their large size and demographics, reflective of the population and racial distribution in western New York. We included in the study children ages 6 months to 11 years seen for well-child visits and 2- to 5-year-old non-Hispanic white children seen for sick-child visits. The data (age, gender, race, weight, height/length), provided without any identifier, were collected by the pediatricians in patients seen sequentially during randomly selected days during the periods October 2003 to February 2004 and January 2006 without implementing any changes in their practice.

We excluded subjects with syndromes or chronic disorders or length or height above or below or 2.5 standard deviations (SD) from the mean for age

and gender.

In children aged more than 2 years, “overweight” or “at risk for overweight” were defined as BMI >85th percentile or >95th percentile for age and gender, respectively, and compared with the National Health and Nutrition Examination Survey (NHANES) 1999 to 2002. In the 6- to 24-month group, we are presenting BMI data (weight/recumbent length squared) and comparing them with age-matched BMI data in NHANES 2001 to 2002.

We followed National Center for Health Statistics guidelines in estimating mean estimates software that incorporated the appropriate statistical weight for data collected at the Mobile Examination Center, taking into account the stratified multi-stage random sample design of NHANES 1999 to 2002. The study was approved by the Human Institutional Review Board of the Women and Children’s Hospital of Buffalo.

17. To T, Vydykhan TN, Dell S, Tassoudji M, Harris JK. Is obesity associated with asthma in young children? *J Pediatr* 2004; 144:162–168.
18. Steinberger J, Moran A, Hong CP, Jacobs DR, Jr, Sinaiko AR. Adiposity in childhood predicts obesity and insulin resistance in young adulthood. *J Pediatr* 2001; 138:469–473.
19. Epstein LH, Kuller LH, Wing RR, Valoski A, McCurley J. The effect of weight control on lipid changes in obese children. *Am J Dis Child* 1989; 143:454–457.
20. Li S, Chen W, Srinivasan S, et al. Childhood cardiovascular risk factors and carotid vascular changes in adulthood: The Bogalusa Heart Study. *JAMA* 2003; 290:2271–2276.